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The effect of compound exercises on different floors in the development of some physical abilities and skill of handball players

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Abstract

This study aimed to know the impact of the combined exercises on different floors and their preference on the regular exercises inside the closed halls in the improvement and development of physical skills and skill of the speed and explosive ability and bear the strength, speed and skill of handling, correction and interview and move the side and front of prejudice to young handball players , and in order to achieve The researcher the procedures for operational and calendar by identifying the problem of search and selection and conduct the necessary tests of data collection reported and statistically analyzed, touched Jus m systematic scientific to find Effective solutions to such a problem. The study was carried out on the players of Al-Qasim Youth Handball Club (20) players were randomly divided into two groups, one of which was applied to the exercises installed on different floors, and the other used with regular exercises inside the hall dedicated to play (closed room), ie, each group (10) players, Once the researcher has completed the pre-experiment measurement applications, the exercises are carried out in an organized methodology that lasted (6)

weeks (3) units per week using the training method (repeated and non-repeated with high intensity). After the completion of the curriculum and measurement after the experiment and the treatment of its results reached several conclusions. The results of training exercises on different floors proved effective in influencing and developing all the anaerobic and skilled abilities of young handball players.

Keywords: Compound Exercises, Different Floors, Physical Abilities.

1. Introduction and research importance

The handball game has a distinctive status which is one of the team games, which are subject to scientific foundations and principles, like any other sports. Therefore, we find that in most developed countries are making tremendous efforts and large and continuous in the preparation of players and practitioners of handball according to training programs on the foundations and methodological contexts scientifically for the development of this game. There is no doubt that the training programs used in them have a large and effective role in the formation and construction of the players, through which the acquisition of bio-kinetic capabilities, including physical and motor in addition to skill and various play plans in order to raise the level of players to the maximum depending on standardized and sound training plans. Therefore, it is imperative for trainers and practitioners to follow the best methods and best methods with knowledge of basic training principles, taking into account the interdependence of the elements of physical fitness and motor abilities and skills during sports performance as special requirements for the type of performance practiced, but this is different in terms of the appearance of these Capabilities and their contribution according to the type of performance required, especially sudden performance in the case of attack or defense.

The use of high intensity in the training of bio-kinetic capabilities will inevitably contribute in the development of a large capabilities proportion which depending on the performance of handball players. And we care in particular those capabilities that rely on the anaerobic energy system, such as: speed, explosive power, power characteristic speed, because most The performance of the handball team depends on the movements of jumping and speed depending on the development and need of the team to play, and this gave an additional duty for the players. And that could cause a development of these capabilities and abilities, in cases of attack and defense alike.

From all this came the importance of research, in that there is a need to develop the capabilities of handball players through the use of special exercises with high intensities, in order to contribute effectively and clearly in the development process and high performance level of the team.

We may not negate the truth when we say that the physical and skill abilities are the main driver of the effectiveness of handball players, without which performance is not consecutive and accurate. It must be based on scientific bases in terms of reduction of intensities, size and comfort. In particular, their times are consistent with the training methods used and are compatible with the development objectives imposed by the training process.

Based on this, and in order to contribute to the solution to the problems encountered by workers in the training of handball, look at several exercises and methods, which instructors to develop the level of players in this game, and noted that there are shortcomings or omissions to use compound exercises on different floors The training of some physical and skilled abilities that handball players must have, especially those that play a significant role in improving and improving the level of play, as weakness in such abilities will reflect negatively on the performance of both players in defense or attack during the Matches and competitions of all kinds.

However, the goal of the research was to:

1. Preparation and implementation of complex training in order to develop the physical skills and skills of advanced handball players.
2. Identify the impact of training exercises on different floors in the development of physical abilities and skills of young handball players.
3. To identify the differences in the impact of the exercises on different floors and regular exercises carried out in the development of physical abilities and skills of the members of the two research groups.

The research hypotheses were:

1. Combined exercises on different floors have a positive impact on the physical and skill abilities of young handball players
2. There is a preference in the effect of favoring the exercises on different floors at the expense of the regular exercises for the purpose of developing the physical and skill

capabilities of the members of the two research groups, which were subjected to these exercises separately.

2. Research Methodology and Procedures:

2.1. Research Methodology:

To succeed the research by choosing a scientific methodology appropriate to his problem, and to solve the problem of this research, follow the experimental approach to design equivalents, as the experimental approach "represents the most veracity approach to solve many scientific problems in a practical and theoretical.

2.2. Communities and Samples of the Search

The research community was determined by the young handball players in Al-Qasim Sports Club within Babil Governorate. The sample is (35) young players from which was selected a random sample of (20) players were divided into two equal, homogeneous and equal groups for experimentation and solving the research problem. The selection of the sample is one of the important steps and stages of the research, and the nature of the research, which controls the research sample, which is a group that is examined or monitored to carry out the experiment, and be one or two people and more.

2.3. Exploratory experience

Date 18 20/ 3 / 15 **:**on Friday

Experience Place : Indoor and Outdoor Handball Courts in Al-Qasim Youth Forum.

The experiment aimed to:

1. Identify the validity of the devices used in the tests
2. Efficiency of the team and the appropriate number of test *.
3. The number of supplies for this test
4. Know the time taken for each test
5. Rationing tensile for the exercises used.
6. The appropriateness of the exercises with the capabilities of the players.

2.3.1. Search tools, methods and devices used in the search :

2.3.1.1 Research Tools :

These are found in the means of data collection, such as questionnaire, observation, interview, testing and measurement, all important for this research, especially testing and measurement.

2.3.1.2 Means and devices used in the research:

To carry out the research, the researcher used the following means (legal handball court, sandy and grassy outdoor playground, 10 hand balls, 10 persons, ground ladder for training 2, different height boxes 8 hours) Timing number (2), medical balance number (1), laptop calculator HP (1), adhesive tape, chalk, metric tape measure, video camera number (2).

2.4. Field research procedures:

2.4.1. Physical abilities selection and testing

For the purpose of determining physical and skills abilities and tests, a number of theoretical references and resources related to handball players were examined, then included in questionnaires and presented to a group of experts with (8), and after the answer nominate (4) physical abilities and (4) tests , So that each choice represents a particular physical ability. Table 1 shows the details of this matter.

2.4.2. Determine physical and skill abilities

Physical and skill abilities were determined based on scientific sources and presented to a number experts (8) [*] the physical and skill abilities that are suitable for the research variables are identified as in Table (1).

Table (1) Physical and Skills Abilities Accepted and Unacceptable

No.	Capacity	Fit	Does not fit
1	**The explosive power for both legs**	✓	
2	**The characteristic power for both legs**	✓	
3	**The strength of the legs**		✓
4	**Defense**		✓
5	**Swing**	✓	

2.4.3. Identification of physical abilities tests:

Tests for physical and skill abilities were determined based on scientific sources and presented to experts (8) [1]. Using the statistical method (Chi-squared test), tests were identified that fit the research variables as shown in Table (2).

Table (2) Physical and Skills Abilities and their Tests for Admission According to their Statistically Acceptable Value

T	Physical and skilled abilities	Acceptable out of (8)	The Calculated Value of **Ch^2** (*)	Representative test for capability	The Calculated Value of **Ch^2** (*)	Acceptable out of (8)
1	**The explosive power for both legs**	**7**	**4.5**	**Vertical leaping**	**8**	**8**
				Vertical jump	**0.5**	**3**
				Broad jump	**0.5**	**3**
2	**The characteristic power for both legs**	**8**	**8**	**Throw a medical ball (800) g**	**4.5**	**7**
				Throw a handball to the farthest distance	**zero**	**4**
				Throw a medical ball after 3 stepS	**2**	**2**
4	**The strength of the legs**	**7**	**4.5**	**The jogging (20) flying**	**8**	**8**
				Kinetic response (Nelson)	**0.5**	**3**
				Defensive move (40) m	**0.5**	**3**
5	**Defense**	**8**	**8**	**Move forward and backward**	**0.5**	**3**
				Lateral move between two persons	**0.5**	**5**

				Move forward between 6 and 9 diagonally	**8**	**8**
6	**Swing**	**8**	**8**	**The swing of jumping boxes on the aiming accuracy of the area of 9 m**	**8**	**8**
				Swing on of the jump of 7 m	**0.5**	**3**
				Swing of stability of 6 m	**0.5**	**3**

(*) The table value of Ch^2 at the degree of freedom (1) and the level (0.05) is equal to (3.84), the calculated value = the largest of them is significant and statistically significant.

2.5. Exploratory experience

To determine the validity of the tests and their applications, the researcher conducted an exploratory experiment on (10) players, randomly tested from the research sample, on 10/12/2017.

1. Stress technique and training loads used in the research.
2. The appropriateness of the exercises used with the capabilities of the sample players.
3. Identify the validity of tools and assistive devices used in the tests.
4. Know the competence of the team members and the appropriate number to perform the tests.
5. Calculate the time and time required to perform the tests.

These goals have been achieved without significant problems.

2.5.1. Characterization of the tests used in the research

The first test: test explosive ability for both legs [1]

Purpose of the test: To measure the explosive power of the muscles of the legs

Registration : According to the following equation [2]

Ability vertical explosive= Mass x 9.8 x Distance/ flight time

The second test: the test of the strength of the two men (the test of jumping forward with the legs together for the maximum distance within 30 seconds) [3]

Recording: calculated distance achieved within (30 seconds) [4]

The third test: the test of the characteristic force of the speed of the two men (partridge for the maximum distance in the man within 10 seconds)

Recording: distance achieved within (10 seconds).

The fourth test: correction from the head and the level on the accuracy of the correction boxes. [5]

Registration: one degree when entering the ball one of the squares (total 6 degrees)

The fifth test: the test of defensive moves forward and backward with a slope for 45 seconds [1]

2.6. Pre-measurement main experiment

The researchers conducted the pre-tests on the members of the research sample in both groups (control and experimental), where all the procedures for physical and skill capabilities were implemented on 20/1/2018 and on the hall and stadiums of the youth forum Qasim and with the help of (Dr. Nabeel Kadhim, Dr. Khalid Shaker).

2.6.1. Equalization of the sample

In order to control the variables that affect the course of the experiment and to proceed from the point of initiation of one researcher work equivalence of the sample and based on the results of tribal tests and using the law (T) for independent samples has shown that the two groups are equivalent to all dependent variables as shown in Table (3).

Table (3) Statistical Estimates of Computational Media and Standard Deviations of Equivalence between the Two Groups.

Variables	Experimental		Control		Values t	Sig	Statistical significance
	Center	deviation	Center	deviation			
Explosive capacity for both legs	243.55	33.43	234.11	3.05	0.84	0.4	random
Characteristic force of speed for both legs	9	0.7	9.8	0.8	1.00	0.00	random

The strength of the legs	50.11	3.55	50.66	3.12	0.35	0.7	random
Defense	10.11	1.05	10.55	1.13	0.86	0.4	random
Swing	3.22	0.66	3.33	0.7	0.34	0.73	

2.6.2. Programming and developing workouts compound exercises

In accordance with the academic and technical expertises to program and organize the courses of the special exercises with a high training loads level for some of the experts and researchers and then put the exercises in a methodology consistent with the capabilities of players and methods of application. So that this working paper included the equivalent of (24) training modules included exercises (Compound Physical and skillful) On two types of floors (sandy and grassy) started on 5/2/2018 and the rate of (3) training units for (8) weeks. The duration of the training unit (90) minutes allocated to the training an average (30-40) minutes at the main section. The intensity used was from 80% to 100% according to the required objectives of each capacity and the stress was rationed on the basis of the maximum frequency and also the height of the boxes and the number of jumps were organized in a waveform, between units (1: 2) and between weeks (1: 3).

2.6.3. Measurement after the main experiment

After the completion of the implementation of special exercises on the experimental research group, conducted post-tests under the same conditions and possibilities that were used during the pre-tribal tests as well as the same arrangement and context in the sequence of tests anaerobic abilities and skills and with the help of the same team staff in the pre-test.

2.6.4. Statistical tools and methods used

In order to analyze the results of the tests in accordance with the objectives of the research, and then use the following statistical methods:

Arithmetic mean, standard deviation, test (t) for independent and associated samples, Ch^2 test

3. Search results, displayed, analyzed, discussed

3.1. Effect of drills mounted on different floors of the vocabulary of the experimental group

Table (4) Statistical Estimates of Pre and Post Measurements and Results of T Test for the Experimental Group

Variables	Measuring unit	Tribal		After		Values t	Sin	Statistical significance
		Center	deviation	Center	deviation			
Explosive capacity for both legs	Watts	243	33.42	352	7.48	9.69	0.00	moral
Characteristic force of speed for both legs	M	9	0.7	13.88	1.45	10.75	0.00	moral
The strength of the legs	M	50.01	3.55	60	5.63	6.45	0.00	moral
Defense	Number	10.11	1.05	14.33	1.11	11.50	0.00	moral
Swing	Degree	3.22	0.6	5.11	0.6	7.24	0.00	moral

Table (3) is shown the difference in the values of the arithmetic media and the standard deviations of the physical abilities of the young handball players from the two measurements before the experiment (concerned with the exercises installed on different floors' finishes) and beyond. For example, the values of (explosive power of the legs) of the mean and deviation respectively at the pre-measurement by (243), (33.42), while came at the telemetry and also respectively (352), (7.48) and here the difference is clear and evident. As well as with all the capabilities examined had estimates different and differentiated.... To find out the reality of this discrepancy and the difference between the values of the media and the standard deviations of all the capabilities involved players, the researcher was selected for these estimates T test for the correlated samples, and the results came according to the sequence of T values

(explosive power) For men (9.69) and the level of significance (0.00) The characteristic speed of the legs (10.75) at the level of indication (0.000), and bear the strength of the legs (6.45) at the level of indication (0.00), and defensive movement skill (11.50) at the level of indication (0.00), and correction (7.24) and the level of significance (0.00).

These results are undoubtedly significant and statistically significant, because they came with error ratios less than (0.05), which is a statistically acceptable level of significance. This means that the training exercises on different floors have already affected the high amounts, which caused the act of development and improvement in physical abilities and skills researched by handball players in the experimental group.

3.2. Effect of regular exercises on the physical and skill abilities of control group vocabulary

Table (5): Statistical estimates of the pre and post measurement and the results of T test for the control group.

Variables	Measuring unit	Tribal		After		Values t	Sin	Statistical significance
		Center	deviation	Center	deviation			
Explosive capacity for both legs	Watts	234.11	3.05	295.66	45.40	4.07	0.00	moral
Characteristic force of speed for both legs	M	9	0.7	11.33	0.50	5.65	0.00	moral
The strength of the legs	M	50.66	3.1	54.88	4.10	4.89	0.00	moral
Defense	Number	10.55	1.13	12.77	1.48	4.26	0.00	moral
Swing	Degree	3.33	0.7	4.33	0.50	4.24	0.00	moral

Table (4) is almost not subject to statistical estimates from the arithmetic media and different standard deviations of all physical and skill abilities of handball players in the control group, which is subject to the table preceded by table (2) of statistical estimates.

In terms of mathematical circles achieved physical abilities (explosive capacity of the two men, a characteristic speed of the speed of the two men, bearing the strength of the two men, defensive movement skills, correction) came in the amount and respectively at the tribal measurement, (234.11, 9, 50.66, 10.55, 3.33) while the amount Also respectively in their order and at the post-measurement (295.66, 11.33, 54.88, 12.77, 4.33), which are different from what they were in the pre-tribal measurement. The same situation (ie the difference and variation) is obtained in the values of the standard deviations for each variable of physical abilities. In order to ascertain the truth of these differences and differences use The researchers tested the statistical (T) for the non-independent (linked) samples, then it was found that the significance of statistically significant at all capacities, and respectively (4.07, 5.65, 4.89, 4.26, 4.24) at a level of consecutive significance and all (0.00), which confirms their significance because Levels expressing error by less than (0.05).

3.3. Impact Differences Composite exercises on different floors are different from standard capacity exercises

As shown in tables (4,3), it is clear that both the combined training and the regular exercises have significantly influenced on the development and improvement of some of the physical skills and skills enjoyed by handball players, in both groups (experimental and control), and when The experimental group In addition to the abilities we have mentioned ... For the purpose of knowing the preference of the effect of any of the exercises, i.e. knowledge of the impact differences, we must test the results after the experiment between the vocabulary of the two groups (experimental and control) using the T-test of independent samples, and the results came in favor of the exercises Mounted on the floor Which underwent different experimental group members and large margins, as the T-test values calculated at levels estimated to denote less (0.05) and table (5) specified.

Table (6) Statistical Estimates of arithmetic Mean and Standard Deviations for Telemetry and for Two Groups

Variables	Experimental		Control		Values t	Sig	Statistical significance
	Center	deviation	Center	deviation			
Explosive capacity for both legs	352	7.48	295	15.13	3.62	002 .0	moral
Characteristic force of speed for both legs	13.88	1.45	10.33	0.50	6.94	2 0.00	moral
The strength of the legs	60	5.63	54.88	4.10	2.19	0.04	moral
Defense	14.13	1.18	12.77	13.48	2.51	2 0.0	moral
Swing	5.81	0.6	4.33	0.1	2.98	0.00	moral

Through the results presented in tables (3, 4) shows that there is a development of the physical and skill capabilities of the experimental groups (all abilities) and control in relation to the control group was to the commitment to attend to the training units by the players and the role of the coach's curriculum role contributed to achieve positive results in the abilities Physical. The experimental group was the development of the telemetry as well as its preference to the control group that the exercises on different floors that were used for the experimental group was based on scientific and physiological bases in terms of distribution of training load and give rest periods and duration according to the nature of the compound method used by performing more than Exercise at the same time in order to reach a situation similar to the state of play, which creates a state of adaptation to the player when the implementation of these exercises, which were prepared with load components of intensity, repetitions and periods appropriate to the nature of the age group are young and this is confirmed Mufti August Rahim (1994) "It is essential that the player reach the performance of

the skill and automatically through the constant repetition of performance and the use of various exercises, which is characterized by the change of requirements and external factors during the exercise of the presence of one or more competitors, as well as in recreational games [12].

This was characterized by exercises by matching the conditions of competition by a large proportion, which created a competitive atmosphere increased the imposition of physical requirements and skill on the player and thus created an atmosphere of suspense and excitement, which reflected positively on the development of these abilities, on the other hand, the effort is fixed, whether on different floors (Sand, artificial turf) or tartan in terms of distance and repetitions because the players do the same approach in terms of intensity, distances and repetitions but the degree of resistance is different because it requires an increase in work done more than what is evident to the development of the players in these abilities researched Glenn and the distinctive strength of the two men and bear the strength of the legs) because the frictional resistance resulting from the performance on different floors help to strengthen the working bones gradually This is confirmed by Abu Ela (2003) "The increase of sand resistance works to raise the level of the player from the physical, skill and functional side, which shows its real importance In imbalances between different muscle groups [13].

This is what characterizes the game of modern handball in the speed of performance on the defensive and offensive axes and the team that does not have these abilities cannot make progress in the level or get ready.

As for the skills of defensive movement and correction, the exercises played an active role in the folding, especially the reflection of the development of physical abilities led to the development of defense movements since the defender depends mainly on the movements of the legs to face sudden movements by the attacker. Whether the jump to perform the skill of repelling or interviewing or move sideways and forward, however, the quality of the exercise was aimed at the defense movements and integration with physical exercises that achieved similar positions to compete. Through the variety of correction exercises on the accuracy boxes or the presence of defenders these exercises contributed to the development of skills of correction from jumping players

4. Conclusions and Recommendations

4.1. Conclusions

1. The results of the training exercises on different floors proved an effectiveness influencing and developing in all the physical and skills abilities that researched by advanced handball players.
2. The preference of the training exercises impact on different floors at the expense of the usual exercises in the development of some physical abilities and skills of young handball players.

4.2. Recommendations

1. It is necessary to conduct a similar study for other categories (young people) of other skills in handball.
2. It is preferable that the trainers focus on training the various floors with composite exercises of physical and skill capabilities to make the conditions difficult for the players handball.
3. Focus on the combined training according to the positions of the players, whether by defense or attack.

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A module for the experimental group

First Training Unit **Exercise intensity: 83%**

Objective of the unit: the development of explosive capacity, a characteristic force with speed, carrying the strength of the two men, defense, aiming)

Today: Sunday

Total time	Comforts		Training size	Performance time	Exercise intensity	Exercise	T
	Between totals	Between duplicates					
15 d	3	45sec	3x 3	10 sec	%90	Jump over wooden boxes with a height of 40 cm and then receive the ball	1

						and swing from jumping high on goal.	
14 d	2.5 min	60 sec	5x 2	18 sec	%85	Move and fast frequencies of the legs on the ground ladder length of 6 m and rotation to receive the aiming ball	2
17 d	2 min	60 sec	5x 2	30 sec	%80	Partridge the legs together starting from the goal line for a distance of 20 m towards the stadium and then return to the area of 9 m and receive the ball and correction on goal	3
13.20	2 min	45 sec	5x 2	20 sec	%80	Action defensive moved between the 6 and 9 position to meet the attacking player and then set off to an area 13 meters away from the goal and receive the ball and correction	5